DOCUMENT RESUME

ED 411 230 SP 037 520

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TITLE Authentic Assessment of Movement Requires a Developmental Approach. Central District Scholar Address.
PUB DATE 1997-00-00
NOTE 17p.
PUB TYPE Journal Articles (080)
JOURNAL CIT Missouri Journal of Health, Physical Education, Recreation and Dance; v7 p3-15 1997
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Child Development; Dance Education; *Developmental Stages; Educational Change; Elementary Secondary Education; Evaluation Methods; Motor Development; *Movement Education; Skill Development; *Student Evaluation
IDENTIFIERS *Authentic Assessment

ABSTRACT

Educators have recognized the limitations of artificial assessments and called for more authentic assessments of student performance, i.e., assessment that is contextualized. In the field of movement education, teachers have typically tended to evaluate their students by administering skill tests, categorizing children for their developmental level on fundamental skills, and watching students play in games. However, skill tests are not very authentic, and game playing is only authentic if the context is specified. Motor development scholars increasingly use a new model of movement that can help teachers design authentic assessment. The model takes into consideration person, task, and environment. The paper presents examples of using a movement model based on Herkowitz' Task Analysis to conduct authentic assessment of two tasks (kicking for accuracy and throwing for distance). The system was designed to analyze a movement task by specifying characteristics of the environment and their levels on an easy-to-hard or simple-to-complex continuum. (Contains 11 references.) (SM)

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ED 411 230

Central District Scholar Address

Authentic Assessment of Movement Requires a Developmental Approach

Kathleen M. Haywood

For years now individuals who know little about education have called for reform of our educational system. These outspoken critics can identify the problems in education easy enough, but their proposed solutions often are lacking because they have so little experience in the educational system.

There is another call for reform, however, and this call has arisen from within. Educators themselves see on a daily basis what works and what does not work, how we help children and how we fail children, what we could do better, and how society must support the educational system. It is this call for reform that should get our attention, for who knows better than those who work with children in the schools every day how we can improve? Who can better see the range of individuals we must accommodate in the schools? While solutions to some problems require the cooperation of many structures and organizations, other solutions can be achieved by educators themselves. They can be achieved by educators who are able to analyze problems thoroughly, are knowledgeable of the material and conditions involved, are open to suggestions, are able to think creatively about solutions, and are motivated and courageous enough to implement solutions.

Too often, educators see physical and dance education as outside the mainstream of education, something superfluous and dispensable. Our ignorance of the current discussions on educational reform can only add to this perception. Complaining to each other about the attitudes of administrators and classroom teachers does little good compared to taking every opportunity to jump into the mainstream, both when the topic of discussion is pertinent and when it is more peripheral to our role in education. Physical and dance educators should participate in the ongoing reform discussions.

Changing the assessment of student performance is one of the reforms called for by educators themselves, and the one on which we will focus here. Educators have recognized the limitations of artificial assessments and called for more *authentic* assessments of student performance. Movement educators should participate in the ongoing discussion of assessment reform. We should examine our own methods of assessment, and if we find the need, work to make them more authentic, just as our colleagues in classroom settings are doing.

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Authentic Assessment in Education

Before we deal with the authentic assessment of movement, let us define authentic assessment and consider the factors that have caused educators to call for more authentic assessment in education.

Definition and Characteristics

Authentic assessment is assessment that is contextualized. The task given a student is placed in a meaningful context. We can see its relationship to, in fact it is transferable to, real-life social and work settings. A student demonstrates what he or she can do in the same way workers do their tasks in nonschool settings (Darling-Hammond, Ancess, & Falk, 1995).

Wiggins (1989) identified four common characteristics of authentic assessments:

1. Authentic assessments are truly representative of performance in the field.
2. Authentic assessments are evaluated using criteria that compare performance with well-articulated performance standards.
3. Authentic assessments help students evaluate their own work against public standards and modify their efforts so to progress.
4. Authentic assessments are works presented publicly and orally.

An obvious goal, then, is for authentic assessments to help students develop a sense of responsibility and ownership in their work, something rarely stimulated by answering multiple-choice test questions, even correctly!

Benefits Compared to Traditional Testing

Why are educators calling for more authentic assessments? Simply, they see the shortcomings of traditional testing. Traditional, especially standardized tests, do not:

- measure many important aspects of learning
- tap skills and abilities students need to be successful in real-life tasks
- tap higher order skills such as structuring tasks, analyzing problems, producing ideas, solving problems (National Research Council, 1982; Resnick, 1987a, b; Sternberg, 1985)
- measure students' overall abilities (Darling-Hammond & Wise, 1985).

That is, traditional tests focus on accumulating and recalling isolated factors and rote skills rather than on conceptual learning. The student plays a passive and reactive role rather than an active role in learning.

Moreover, the natural tendency of teachers to emphasize what tests measure results in our failure to use the best strategies for teaching. We limit the types of teaching and learning opportunities provided in classrooms (Darling-Hammond et al., 1995). We overemphasize superficial content and rote drill on discrete skills, leaving little time for thought-provoking tasks. In ef-

fect, we narrow the curriculum. Since 1970, basic skills test scores have increased while assessments of higher order thinking skills have declined in almost all subject areas.

Finally, traditional test scores are poor predictors of student performance in other settings. The scores provide teachers and parents with no information about why students score what they score. They ignore students' background and experiences. So, we begin to think of children who score poorly as having deficits to be remediated. We overlook individual differences, forget to take different approaches to teaching that accommodate children's' different approaches to learning, and fail to build on many children's strengths. Authentic assessments can evaluate students more completely and accurately. Moreover, they provide the kind of information that helps teachers develop instructional strategies to meet the needs of individual children (Darling-Hammond et al., 1995).

Authentic Assessment in the HPERD Fields

Let us turn now to the use of authentic assessment in the fields of health education, physical education, recreation, and dance education. Because more has been written about authentic assessment in classroom settings, the emphasis here is on the authentic assessment of movement. Left for another time are discussions of authentic assessments in health education and of physical fitness.

Teachers and coaches of movement skills first might ask, "Why the need to make movement assessment more authentic?" After all, we never assess students' movement skills by giving them true and false or multiple choice tests. But, what ***do*** we do? If we evaluate movement at all (and this is a big "if"), we typically do one of three things:

- administer skill tests
- categorize children for their development level on fundamental skills
- watch students play in games or perform in concerts

How authentic are these assessments? Let us consider them one-by-one.

Skills Tests

Skill tests have a long tradition in the teaching of sport skills. I remember taking a skill test for tennis serving in school. The service box on the tennis court was divided into zones with different point values. The highest was a "6" for an area deep and next to the center line. If you went for the "6" and missed a little left you got a "5" but if you missed a little right you got "0" because that was not in the service box at all. To this day, remembering that skill test reminds me that a serve deep down the middle is effective. But, I could get a "6" on the test by "blooping" a ball into that zone. Doing that in a tennis match results in my opponent crushing the ball to a location out of my reach for a winner! We see here both the "authenticity" and "unauthenticity"

of the skill test.

Another thing I remember about skill tests in school is that my best friend and I practiced the tests so we could score better and get a higher grade. Do you think that made us better players?

Consider another example, perhaps having a fifth-grade class throw for distance. It is relatively easy to obtain an accurate score, the number of feet the ball traveled. Having obtained this number, what does it mean to us or to our students? Do we know if it represents a large child with poor technique or a small child with good technique? When two children receive the same score does it mean their performance was the same and they both proceed to the same practice activities? We know the answer is *no*.

Skill tests, while they might have a place in the evaluation of sport skills, are not very authentic. They are not contextualized and rarely give teachers information about the teaching strategies needed to help students improve. One of the reasons teachers of young children probably avoid skill tests is their recognition of the influence of physiological maturation rate on scores.

Assessment of Developmental Level

Several approaches to identifying a child's developmental level in performing a fundamental motor skill are available. All focus on the movement form or process (that is, the technique used) rather than the outcome (distance, speed, etc.). The sequence of developmental steps is identified for specific body areas (arms, legs, trunk) or for all body areas together.

The child evaluated can be given a level, such as "Stage 2" or "Arms, Step 2; Legs, Steps 3." Teachers, knowing the movement form a number represents know the movement characteristic of the next level to which a child should move, but not necessarily the teaching strategy best used to get the student there. (See my text (Haywood, 1993) for a description of various developmental sequences and corresponding references.)

The researchers who identified these developmental sequences emphasized that:

- the sequences applied only for a particular task goal (i.e., a throw for distance, not a throw for accuracy)
- comparisons, either within or across children, should be made only across identical contexts (type and size of the ball, type of surface, etc.).

For developmental level assessments to be authentic we must specify the context. This can be done and we can build upon developmental level assessments to create authentic evaluations. Before we do so, though, let us consider game play.

Game Play

At first thought we might conclude that teachers who observe students in game play or concert performance have conducted authentic assessments all

along. Game play certainly is "real life" performance and is public. Perhaps movement educators have been far ahead of their classroom colleagues! Recall, though, that Wiggins (1989) indicated that authentic assessments also compare performance to well-articulated performance standards and help students evaluate and modify their performance to improve. How do we evaluate game play beyond a "good/bad" judgment or winning/losing?

Statistics are of some use—points scored, rebounds, saves, etc. But, we all know that good game play is sometimes a pass not made, a slight fake, "mixing up" shots, and so on. Game play is authentic but to have an authentic assessment we need to be able to specify the context and the goal at the moment a movement skill is executed. We must be able to recreate the context and goal so that a student:

- could practice the movement repetitively
- knows how to simplify, complicate, or vary the movement task
- knows if subsequent attempts are improved over earlier ones

and a teacher could select appropriate teaching strategies.

A New Model

Motor development scholars increasingly use a new model of movement. This model can assist teachers in designing authentic assessments. The model is complicated in that the interactions of three major components are considered. Yet, anything less would not capture the relevant aspects of movement. This model was first pictured with a triangle by Karl Newell (1986; see Figure 1). The organism, or for our purposes, person is placed at one point. The task

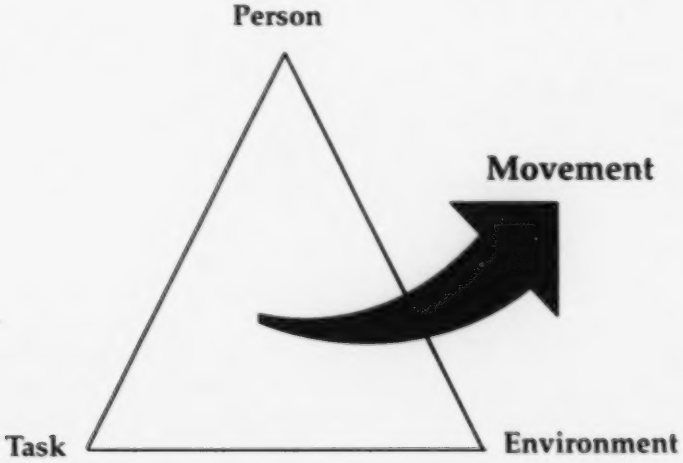

Figure 1

is placed at a second point and the environment or context at the remaining point. Movement arises from the interaction of the three.

Now if you do not very much about the study of motor development, you might not appreciate why this is new! Consider that the traditionally dominant perspective on motor development, the maturation perspective, focuses only on the person. Movement is linked to maturation of the person, especially neurological maturation. With this perspective, one would expect motor skills to unfold as a function of growth and maturation, inferring that all persons upon achieving maturation possess all basic motor skills. More advanced skill is related to genetic inheritance, evident in the notion of the "born athlete." We know these notions are not accurate, but the maturation perspective continues to influence thinking about motor development. For example, throughout the *National Standards for Physical Education* (NASPE, 1995) we can find phrases such as "mature motor pattern" and "mature form in all locomotor patterns."

Most of you are familiar with behaviorism, another influential perspective in psychology and education. Behaviorists also tend to have a single focus, but of course it is the environment rather than the person. In the extreme, behaviorists hold that all behavior, including motor behavior, can be controlled by manipulating the environment, despite the person.

Likewise, with most other perspectives taken toward development, the focus is on one or two components. Some consider the interaction of two components, but the incorporation of all three components, person, task and environment, and the focus on their interactions, is a new perspective.

Of course, this model is a complex one and assessment based on it complex. Yet, if movement arises from the interaction of these factors, assessment of movement cannot be very authentic unless the evaluator tracks all three factors. So, our challenge is to capture more of the complexity of "real worldness" in our movement assessments, but keep them manageable.

An Authentic Assessment System

Let us address a system for conducting more authentic assessments of movement. I suggest a workable system can be built upon Herkowitz' Task Analysis (Herkowitz, 1978). As the name infers, this system was designed to analyze a movement task by specifying characteristics of the environment and their levels on an easy-to-hard or simple-to-complex continuum.

For example, for the task of "kicking for accuracy" one characteristic might be the size of a goal, which can vary in size (see Table 1). We could be precise and give width and height or simply say *large* for an easy task, *medium* for a moderate task, and *small* for a hard task. Another characteristic could be defense, and the levels might be *none* (easy), *goalie only* (moderate), *defenseman only* (moderately hard), and *goalie and defenseman* (hard). More characteristics can be designated as appropriate.

We also can have a category for the activity context. Possible levels in this

category would be *drill, lead-up game,* and *game play*. Notice that the harder, or more complex, levels move toward the more "real world" context.

Using just this task analysis, a movement educator could evaluate a student by circling the level the student can accomplish. The teacher could then state what the student can do and what the student cannot yet do. For example, "the student can score a goal into a medium-sized goal defended only by the goalie in a drill. The student cannot yet kick a goal into a small, defended goal in a lead-up game, nor a medium sized goal when marked by a defenseman."

This is useful information to be sure, but not as authentic as it might be if we could account for how the student executed the movement itself and be more specific about the student's success level.

First, let us add information about how the person moves. We can make use of the developmental levels identified for the particular skill (see Table 2). Developmental levels for kicking have not been validated, but we can make use of our knowledge of developmental changes. We can add a category for trunk action, the levels being *None, Small Range,* and *Large Range*. We also add leg action. The lowest level is *No Wind-up* (leg moves forward from standing). The next level is *Straight Leg Kick* (wind-up then leg moves forward with knee extended). The next level is *Sequential Leg Movement: Small Range of Motion* (wind-up then thigh moves forward then knee extends for contact) and finally *Sequential Leg Movement: Large Range of Motion*.

Notice that we could have other components of the kick—arm action, or even non-kicking leg. Yet, we are making choices regarding the most critical elements to keep the number of categories manageable. There is no "right" number of categories; teachers choose, based on importance and manageability. Teachers might even change the categories, depending on the learner, and as they move through the school year and through the school curriculum.

Lastly, we can add a category that gives more information about the student's performance. Without this additional category, student performance is a yes/no. A more developmental approach is to realize that students often progress by executing a skill rarely, then occasionally, then often, usually, and almost always. We can add a category with these levels, or we can be more numerical, such as 0%, 20%, 40%, etc. of the time.

Altogether, we have a paper or pencil recording device requiring a teacher to merely circle what is observed. With differently colored pens, 3 or 4 students recordings could be put on one sheet, or that of a single student at different times. The chart could be placed on a hand-held computer and students' performance recorded by touch of a stylus on the screen.

Notice that tracking the three components from which movement arises allows us to say something about

- the person, such as "Bob has started using trunk rotation" or "Bob still kicks with a straight leg,"
- the environment, such as "Bob can kick accurately from 20 yards when there is no goalie defending," and

Table 1

Task: Kicking For Accuracy

Student:: _____ Date: _____

Difficulty	Environment				Goal
	Size of Goal	**Ball**	**Defense**	**Activity Type**	**Student Performance**
Easy	Large	Playground	None	Drill	Rarely
	Medium	Small Soccer	Goal Only	Lead-up Game	Occasionally
			Defenseman Only		Often
Hard	Small	Regulation Soccer	Goal + Defenseman	Game Play	Always

Note. The task analysis portion based on "Developmental Task Analysis: The Design of Movement Experiences and Evaluation of Motor Development Status" by J. Herkowitz, 1978, in Motor Development by M.V. Ridenour (Ed.), Princeton, NJ: Princeton Book Company

Table 2

Task: Kicking For Accuracy

Student:: _____ Date: _____

Difficulty	Environment				Person		Goal
	Size of Goal	Ball	Defense	Activity Type	Trunk Action	Leg Action	Student Performance
Easy	Large	Playground	None	Drill	None	No Wind-Up	Rarely
	Medium	Small Soccer	Goalie Only	Lead-up Game		Staight Leg Kick	Occasionally
			Defenseman Only		Small Range	Sequen-tial, Small Range	Often
Hard	Small	Regulation Soccer	Goal + De-fenseman	Game Play	Large Range	Sequen-tial, Large Range	Always

Note. The task analysis portion based on "Developmental Task Analysis: The Design of Movement Experiences and Evaluation of Motor Development Status" by J. Herkowitz, 1978, in Motor Development by M.V. Ridenour (Ed.), Princeton, NJ: Princeton Book Company

- the extent to which the task goal is met.

We are indicating where students are *now*, in the context of what simpler things they can already do, but more importantly we can identify and quickly communicate to students, administrators, and parents what comes next. For example, we might say, "Bob is ready to work on shooting with a goalie defending from 20 yards."

We also are able to address interactions in this system. Consider the task of throwing for distance (see Table 3). If a thrower just cannot throw over 30 yards with a small softball, we can look at the other categories. Perhaps the thrower is taking a homolateral step rather than a contralateral step. Our strategy in working with the thrower centers on that change. Perhaps we would mimic a baseball pitcher with a high leg kick. Likewise, if the thrower winds up by flexing the humerus rather than taking a circular downward or even circular upward backswing, we would focus on that change. Now, if the thrower has a circular backswing and takes a contralateral step, but is a small individual or child who is small for chronological age, we might conclude that the child is maximizing throwing distance at this time. We would know that throwing distance will increase with the child's physical growth and maturation. So, this assessment guides us in choosing teaching strategies.

This is critically important, given our current thinking about motor development. Since we no longer believe motor skills are acquired automatically, we must take the responsibility for guiding our students' skill development. If we seek to improve their skills, we must keep in mind that verbal instructions on how to move are of limited use, especially in working with children. Manipulating the task goal and the task environment hold more promise. That is, it is the interactions among person, task, and environment that inform teaching strategies.

I suspect many teachers are interested in making their movement assessments more authentic for the good of their students and their programs. Yet I believe authentic assessment is a necessary component of helping students meet the new *National Standards* (NASPE, 1995). Consider, for example, two of the 4th grade standards, a sample benchmark for each, and an assessment example for each:

1. Demonstrates competency in many movement forms and proficiency in a few movement forms.
   - Sample Benchmark
     - Throws, catches, and kicks using mature form.
   - Assessment Examples
     - Teacher observation — observational record
     - Event task — observational record
     - Peer observation
2. Applies movement concepts and principles to the learning and development of motor skills.
   - Sample Benchmark
     - Understands that appropriate practice improves performance

Table 3

Task: Throw for Distance

Student 1: _____ Date 1: _____
Student 2: _____ Date 2: _____
Student 3: _____ Date 3: _____
Student 4: _____ Date 4: _____

Difficulty	Environment	Person			Goal
	Ball	Leg Action	Backswing	Size	Student Performance
Easy	Rubber	No Step	None	Small for Age	20 yards
	Small Softball	Homolateral Step	Upper Arm Flexion		30 yards
	Regulation Softball	Contralateral, Short	Circular Upward		40 yards
Hard		Contralateral, Long	Circular Downward	Large for Age	50 yards

Note. The task analysis portion based on "Developmental Task Analysis: The Design of Movement Experiences and Evaluation of Motor Development Status" by J. Herkowitz, 1978, in Motor Development by M.V. Ridenour (Ed.), Princeton, NJ: Princeton Book Company

- Assessment Examples
  - Teacher observation — observational record
  - Student log
  - Event task
  - Peer observation
  - Written test

(NASPE, 1995, 31-32)

Considering these assessment examples, we can see that both *teacher* and *peer observations* must be authentic, by tapping the interactive nature of person, task, and environment, in order to inform teaching/learning strategies to move students closer to the standard. The system we have just built could guide those observations and provide the written record. It could be the basis for other assessments, too. A *student log* could be a collection of tables (assessment forms), showing a student's progress down the various columns. Student also can use the tables to plan an event (the *event task*). The assessment forms could comprise some of the items, perhaps along with a videotape, student logs, and student reflections, in a student portfolio. Hence, authentic assessments enhance our ability to help students meet the national standards.

In closing, I would like to highlight how the movement model generated and used by motor development scholars in their study of that discipline has informed a part of our practice, authentic assessment. Answers to our reflections and inquiries, our research, inform good practice. Our (movement educators) survival as a part of the American educational system is related to:

- our teachers and teachers in preparation being knowledgeable of current research in the subdisciplines of the movement arts and sciences, and
- their willingness to use that knowledge to engage in the continued and cyclic introspection undertaken by the educational community to improve educational systems and methods for the benefit of children.

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